

## **Monitoring and Performance Standards**

As with all large scale projects and restoration efforts it is important to set priorities for which actions are of highest priority and therefore should be funded and implemented first. CALFED is at the first stage of implementation of the Ecosystem Restoration Program. The projects selected for funding in 1998 meet the highest priorities identified by a technical team of agency and nonagency scientists. Those priorities are consistent with our broad ecosystem goals which are described in Attachment I.

**Questions: How do we evaluate effectiveness of the funding we are providing? What clear and unambiguous performance standards are being adopted to determine if we are close to success or have achieved success?**

Regarding the effectiveness of the funding and performance standards -- We are evaluating the effectiveness and performance of restoration efforts on three levels:

- **Project Implementation Monitoring.** Each restoration project is being evaluated/monitored to ensure that it is being implemented as planned. This includes review of schedule, budget, and deliverables which are included in the quarterly report required of each project. (At this level the performance standard is completion of the project as funded.)
- **Project Effectiveness Monitoring.** Each restoration project is being monitored to evaluate the effectiveness of the project at meeting its ecological/biological objectives. A primary consideration for project selection and funding was the ability of the project to meet ecological objectives that contribute to the goals of ecosystem health identified below. (At this level the performance standard is the achievement of the ecological/biological objective which varies for each project.)
- **Ecosystem Monitoring.** CALFED has identified four goals for ecosystem recovery in its Ecosystem Restoration Strategic Plan. To measure success in meeting these goals, state and federal agencies and stakeholders are developing quantifiable performance standards and indicators of ecological health. Projects will be monitored over a longer term process to assess the progress towards ecosystem recovery and health. A more detailed description of the Strategic Plan and ecosystem monitoring and performance standards is provided in Attachment I.

An example of how the three levels of performance are measured is included in the box below and in Figure 1. In this example we use the Gorrill Dam Fish Screen and Ladder project which is one of the first projects implemented through this program and can serve as a model.

### **Example: Gorrill Dam Fish Screen and Ladder on Butte Creek**

**Project Objective:** Reduce delays and obstacles to salmon migration.

#### **Project Implementation Monitoring:**

The Gorrill Dam Fish Screen and Ladder project is divided into two tasks. Task 1 is design and permitting and Task 2 is construction. Each task includes a specific schedule and budget as well as deliverables. The contract for the project will require that progress on all aspects of each task be reported quarterly. The contract manager will be evaluating this information to ensure the project is making adequate progress. The completed project will be inspected to ensure that the operating standards for the screen and ladder are met. The information will be summarized in the quarterly report which will be provided to Congress, the Ecosystem Roundtable, and CALFED agencies.

#### **Project Effectiveness Monitoring:**

Effectiveness of the Gorrill Dam Fish Screen and Ladder project will be assessed by monitoring the number returning adult spring- and fall-run chinook salmon on Butte Creek and the timing of their migration. The number of out migrating juvenile salmon will also be monitored. This data on post project migration will be evaluated relative to pre-project migration data to determine project success.

#### **Ecosystem Monitoring:**

The Gorrill Dam project is directed at reaching the Goal A (see attachment I) which is "recovery of listed species dependent on the Delta." To evaluate progress towards this goal, a performance standard (quantifiable objective), such as a spring-run salmon population level, will need to be set. The number of returning spawners, the number of outmigrants, and the timing of migration are indicators of progress towards the goal and objective. Although the final performance standard has not been developed, the current abundance of spring-run is significantly below levels needed for a sustainable population. The current average abundance is only 2,400 spring-run chinook salmon, which is well below the levels called for in the Recovery Plan for Sacramento-San Joaquin Native Fishes (Nov. 1996). The plan requires that the number of wild spawners reaches a mean number of 8,000 fish and does not drop below 5,000 fish for 15 years, three of which are dry or critical years. This illustrates the need to begin restoration efforts before final performance standards are set.

Question: Are we going to postpone any major Program decisions or alternatives until we have the results of the early phases? Or are we going to agree on a basic blueprint and simply adjust it through adaptive management?

CALFED is exploring three basic alternatives (approaches) to solving the problems in the Bay-Delta system. Considering the complexity and large number of items to be completed for each alternative, implementation will likely be conducted in several stages over 30 or more years. CALFED will develop an implementation plan which outlines the order in which portions of the Program should be staged and linked with other portions of the Program.

CALFED is adopting an adaptive management approach in all components of the program. No decision has been made at this time regarding selection of an alternative or decisions on major program components, but consistent with the principles of adaptive management it is possible that major decisions could be staged over time. Staging would require monitoring and assessment of progress on program implementation.

Adaptive management acknowledges that we will need to adapt the actions that we take to restore ecological health and improve water management. No long-term plan for management and restoration of a system as complex as the Bay-Delta can predict exactly how the system will respond to Program efforts, or foresee events such as earthquakes, climate change, or introduction of new species to the system. Therefore, during each stage of implementation, milestones and decision points will be identified to guide future actions into the next stage. This allows actions whose results are uncertain to be taken, evaluated and the results of those evaluations used to refine future actions and inform future decisions. Adaptive management is illustrated below.

